

# A WRAIR Update

Walter Reed Army Institute of Research Newsletter

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## Recognition to Scientists at WRAIR for Japanese Encephalitis Vaccine

DoD was recognized 24 May 2010 by Intercell for its contributions in the research, development and clinical testing of the newly licensed Japanese Encephalitis vaccine. Intercell specifically gave special recognition to the scientists at WRAIR who initiated the vaccine project and contributed to

numerous aspects of the development of the vaccine up to licensure. As a result of this public-private partnership, military personnel, dependents, and civilians will be protected against the serious and growing risk of disease caused by JE when travelling to many countries of the world.



Pictured L to R Dr. Claudia Golenda (WRAIR), Mr. Gerd Zettlmeissl (Intercell), Dr. Ken Eckels (WRAIR), COL Gray Heppner (WRAIR), LTC Art Lyons (WRAIR), Mr. Paul Wilson (Intercell), Mr. Jeff Hackman (Intercell), MG James Gilman (MRMC), and Dr. Charles Rice (Performing the Duties of the Assistant Secretary of Defense for Health Affairs).

## WRAIR Supports Initial Meeting for Start of Phase II of PREVENT, Preventing Violent Explosive Neurotrauma

The team of collaborators working with the Defense Advanced Research Projects Agency's (DARPA) program Preventing Violent Explosive Neurotrauma (PREVENT) met in Annapolis March 2010 to officially launch stage two of the program. Per DARPA's website, the second phase of the program will focus on prevention of injury and guide the development of passive and active mitigation strategies, the engineering and development of personal protective armor, and therapeutic interventions for those injured. The program also will develop test systems and predictive models. These models will characterize blast exposure in order to optimize treatment paradigms, explosive blast mitigation, and protective strategies.

WRAIR is the lead organization of Phase II. Within WRAIR, Dr. Richard Bauman, the Systems Integrator of PREVENT, and several other WRAIR scientists contribute to and direct the mission of this project, which is centered in the Closed-Head Brain Injury Branch of the Center for Military Psychiatry

and Neuroscience. Other collaborators include Yale University, Harvard University, the Safar Center within the University of Pittsburgh Medical School, the Uniformed Services

University of the Health Sciences, the Departments of Neurological Surgery at the Walter Reed Army Medical Center and the National Navy Medical Center, and a private research lab (ORA). Through this successful collaboration of physicists, engineers, biologists, biochemists, and neurological surgeons, explosive blast injury to the human brain has been and will continue to be studied in order to characterize potential biomechanical and biological mechanisms of injury, and the pathophysiological, neuropathological and neurologic impairments that resulted from exposure to explosive blast.

Phase I of the program comprehensively evaluated the physics of interaction between an IED blast and the neurological system and determined which component(s) are causally associated with neurologic injury.



## Commander's Corner COL Kent Kester



In this edition of the Commander's Corner, I would like to take the opportunity to highlight two recent U.S. policy initiatives and how WRAIR plays a part in their execution: the White House's updated National Security Strategy and the DoD's Military Health Support in Global Stability Missions. As these initiatives develop, the WRAIR is sure to play a role.

The White House publically released the updated National Security Strategy on 27 May 2010. Key areas outlined in the strategy document that intersect with the WRAIR's mission include a greater emphasis on Science, Technology, Engineering, and Math Education (STEM), enhanced cooperation with international partners, and the pursuit of a global health strategy. The WRAIR's footprint is around the globe and our varied research supports all of these components and more.

The second policy that WRAIR efforts support is the military's planning and provision of medical support in international stability operations. The DoD has finalized a new policy that assigns responsibilities and instructions to specific department components, which was just released publically in May of 2010. As reported by the Military Health System (MHS), "Stability operations are humanitarian relief missions that the military conducts outside the U.S. in pre-conflict, conflict and post-conflict countries, disaster areas or underdeveloped nations, and in coordination with other federal agencies, allied governments and international organizations. Such missions can include reestablishing a safe environment and essential services, delivering aid, transporting personnel, providing direct health care to the population, mentoring host country military medical personnel and helping nations rebuild their health infrastructure." WRAIR's work directly supports this. WRAIR will

work with the MHS to meet the larger DoD mission envisioned "to prepare to establish and maintain the health sector capacity and capability of other countries when the local population, international or U.S. civilian agencies cannot do so, and to support and collaborate closely with other U.S. departments, foreign governments and security forces, nongovernmental and regional organizations." As the DoD's premier biomedical research institute, the WRAIR will continue to play a vital role in the DoD's and the U.S. Government's mission around the world to support a peaceful, educated, stable, and healthy global community.

For these and other reasons, the scientific and fiscal sustainment of our overseas laboratory platforms is one of my top priorities. In an era where other elements of the DoD (such as DTRA) as well as other U.S. Government agencies are interested in expanding their medically-related operations overseas, it is essential that we maintain our own unique military medical research identity in the context of a sustainable business model.

And related to this, I would like to introduce our new Director of Overseas Laboratory Operations. With the departure of LTC Amy Korman to the OSD-Office of African Affairs, we welcome LTC Jamie Blow to the WRAIR HQ team. Jamie comes to us from the Defense Pest Management Board (located in Building 172 across from the AAFES gas station on the Forest Glen Annex) where she served most recently as the Chief of the Operations Division. She's a Ph.D. level entomologist with a wealth of international and operational experiences.

For more information about the National Security Strategy, visit [www.whitehouse.gov/issues/defense](http://www.whitehouse.gov/issues/defense).

The new MHS policy is DoD Instruction 6000.16 and is available at [www.dtic.mil/whs/directives/corres/pdf/600016p.pdf](http://www.dtic.mil/whs/directives/corres/pdf/600016p.pdf).



LTC Jamie Blow, WRAIR's new Director of Overseas Laboratory Operations.

## WRAIR Soldier Receives General Douglas MacArthur Leadership Award

By: Lt. Col. Song H. Gotiangco, WRAIR

Capt. Richard E. Wood of WRAIR is the recipient of the prestigious General Douglas MacArthur Leadership Award for 2009. He is the United States Army Medical Command representative. The selection criteria was based on overall leadership performance during 2009 with attention to leadership, influence, proficiency, values, team-building, and personal kills.

Wood's most significant accomplishment and contribution in 2009 was serving

at the 44th MEDCOM, Fort Bragg as a premier medical logistician while deployed to support OEF/OIF in Iraq. He was instrumental in supporting the theater wide distribution of over \$12 million worth of HEMCON bandages, \$1.5 million worth of Warrior Aid Litter Kits, and over 55,000 units of life-saving blood products.

Wood currently serves as both chief of supply operations in logistics and as the detachment commander at WRAIR. He has been selected to serve as the Chief of Staff at U.S. Army Medical



Research Unit-Kenya in the fall of 2010. CPT Wood represents the epitome of professionalism and competence of the AMEDD junior officer. He stands for Duty, Honor, Country, ideals for which General MacArthur stood. For more information on the award, please visit [www.armyg1.army.mil/macarthur/default.asp](http://www.armyg1.army.mil/macarthur/default.asp).



## WRAIR Involved in Space Shuttle Discovery April 2010 Mission

WRAIR scientists supported a space tissue loss experiment on space shuttle Discovery's 5 April 2010 mission. For the mission, NASA scientists sent three fundamental life science experiments onboard space shuttle Discovery in hopes of better understanding exactly how spaceflight affects cell growth and how cells fight off infections.

As the Space Shuttle Program winds down, we thank all those scientists and staff who have supported this important endeavor. There is significant interest in placing these cell culture modules in space via other programs.

There were two Space Tissue Loss experiments on board, and WRAIR provided the hardware. The Department of Defense's Space Test Program developed the payload and managed the hardware integration for the Space Tissue Loss Experiments.

The Space Tissue Loss (STL) activity is a collaboration between NASA's Ames Research Center, Moffett Field, Calif., WRAIR, and the Department of Defense's Space Test Program (STP), Houston, Tx. The STL payload included two experiments that were conducted inside the Cell Culture Module (CCM), an incubator system for growing cells developed by WRAIR.



Scientists carefully remove stem cells from a shelf on the Discovery shuttle after its return. The Cell Culture Module (CCM), an incubator system for growing cells developed by WRAIR, was on the April 2010 space shuttle Discovery mission.

The CCM is designed to help scientists study the effects of microgravity on cells in space and has flown on 17 shuttle missions. The CCM is a completely automated, temperature-controlled system that fits entirely inside a shuttle middeck locker and can be customized to meet specific science objectives. The CCM's environmental control systems support cell growth in the challenging space environment. Tissue Genesis, Inc., Honolulu, HI developed the unique cell growth support system for STL and all past CCM flight experiments. Bioreactors, or small chambers that enable cells to grow, are connected to the CCM through a flow path support system that pumps nutrients around the growing cells. Separate flow paths enables scientists to conduct independent experiments and selectively inject preservatives or bacteria into specific bioreactors.

For more information on the project, visit <http://spacebiosciences.arc.nasa.gov/spacetissueloss.html>.

## WRAIR Patch On Board for Discovery's STS-131 Mission



WRAIR's involvement in Discovery's STS-131 mission through the Space Tissue Loss program is commemorated in a mission patch, which was collaboratively designed. All of the patches that were made flew on the mission. Steve Van Albert, who managed the project at WRAIR, provided the following description of the patch design: STL is the historic name for this payload and it stands for Space Tissue Loss. It goes back to the beginning of this project where investigators were performing experiments with the hope to reverse muscle mass loss in space with a regenerative medical slant for the military. STP stands for the Space Test Program which is a DoD office in Houston that assists in integrating DoD payloads onto the shuttle. NASA is this case stands for NASA Ames, who facilitated the two investigators that were chosen for their dual research in space and the military. The seventeen stars represent the past 17 (all successful) missions on which this payload has been flown. The DNA helix in the middle links the research to space (the shuttle) and the military (the helicopter). Finally the red stars on the map indicate the locations of the teams that contribute to the success of the mission: WRAIR in Washington, the Cape in Florida, STP in Houston, one researcher in Arizona, NASA Ames and the other researcher in California and our prime contractor Tissue Genesis, Inc in Hawaii.

## WRAIR Staff Attend Army Medical Symposium

The Army Medical Symposium, co-sponsored by the U.S. Army Medical Command and the Association of the United States Army (AUSA), was held 17-21 May 2010 in San Antonio, Texas. The theme of the meeting was, "Army Medicine: Bringing Value...Inspiring Trust." As reported by AUSA, "the purpose of this symposium is to stimulate dialogue among senior government officials, military leaders and industry executives concerning the

role of the Army Medical Department during a time of war and a period of transformation. This symposium is vital to Army's interest to bring together the public and private sectors to facilitate an intellectual exchange of concepts and capabilities for effective and efficient management and procedures for providing worldwide Army medical care." WRAIR personnel attended this informational meeting. The Institute had a booth in the MRMC exhibit.

Left: AMEDD communicates Army Medical Symposium theme in exhibit hall.

Right: WRAIR's booth in the MRMC exhibit at AUSA's medical symposium.



## Publications

### This list is a compilation of articles published since April 2010. The list reflects the depth of work at WRAIR.

#### *Factors associated with recovery of multidrug-resistant bacteria in a combat support hospital in Iraq.*

Aldous, W.K., Co, E.M. *Infect Control Hosp Epidemiol.* 2010 Apr; 31(4):425-7.

#### *A randomized controlled trial of local heat therapy versus intravenous sodium stibogluconate for the treatment of cutaneous Leishmania major infection.*

Aronson, N.E., Wortmann, G.W., Byrne, W.R., Howard, R.S., Bernstein, W.B., Marovich, M.A., Polhemus, M.E., Yoon, I.K., Hummer, K.A., Gasser, R.A., Jr., Oster, C.N., Benson, P.M.PLoS Neglected Tropical Diseases. 2010 4(3):e628.

#### *Applying information and communications technologies to collect health data from remote settings: a systematic assessment of current technologies.*

Ashar, R., Lewis, S., Blazes, D.L., Chretien, J.P. *Journal of Biomedical Informatics.* 2010 Apr; 43(2):332-41.

#### *Effects of duration of injection drug use and age at first injection on HCV among IDU in Kabul, Afghanistan.*

Bautista, C.T., Todd, C.S., Abed, A.M., Botros, B.A., Strathdee, S.A., Earhart, K.C., Safi, N., Scott, P.T. *J Public Health (Oxf).* 2010 Apr 26.

#### *The effect of food consumption on lumefantrine bioavailability in African children receiving artemether-lumefantrine crushed or dispersible tablets (Coartem) for acute uncomplicated Plasmodium falciparum malaria.*

Borrmann, S., Sallas, W.M., Machevo, S., Gonzalez, R., Bjorkman, A., Martensson, A., Hamel, M., Juma, E., Peshu, J., Ogutu, B., Djimde, A., D'Alessandro, U., Marrast, A.C., Lefevre, G., Kern, S.E. *Tropical Medicine & International Health.* 2010 Apr; 15(4):434-41

#### *Aggressiveness and Perceived Marital Quality: The Moderating Role of a Family-Supportive Work Climate.*

Cabrera, O.A., Bliese, P.D., Hoge, C.W., Castro, C.A., Messer, S.C. *Military Psychology.* 2010 22(1):57-67.

#### *Immune response to Plasmodium vivax has a potential to reduce malaria severity.*

Chuangchaiya, S., Jangpatrapongsa, K., Chootong, P., Sirichaisinthop, J., Sattabongkot, J., Pattanapanyasat, K., Chotivanich, K., Troye-Blomberg, M., Cui, L., Udomsangpetch, R. *Clin Exp Immunol.* 2010 May; 160(2):233-9.

#### *Prospective cohort studies of dengue viral transmission and severity of disease.*

Endy, T.P., Yoon, I.K., Mammen, M.P. *Curr Top Microbiol Immunol.* 2010 338:1-13.

#### *Genome sequence of the deep-rooted Yersinia pestis strain Angola reveals new insights into the evolution and pangenome of the plague bacterium.*

Eppinger, M., Worsham, P.L., Nikolich, M.P., Riley, D.R., Sebastian, Y., Mou, S., Achtman, M., Linder, L.E., Ravel, J.J. *Bacteriol.* 2010 Mar; 192(6):1685-99.

#### *MosquitoMap and the Mal-area calculator: new web tools to relate mosquito species distribution with vector borne disease.*

Foley, D.H., Wilkerson, R.C., Birney, I., Harrison, S., Christensen, J., Rueda, L.M. *International Journal of Health Geographics.* 2010 9:11.

#### *Serotype-specific differences in the risk of dengue hemorrhagic fever: an analysis of data collected in Bangkok, Thailand from 1994 to 2006.*

Fried, J.R., Gibbons, R.V., Kalayanaraj, S., Thomas, S.J., Srikiatkachorn, A., Yoon, I.K., Jarman, R.G., Green, S., Rothman, A.L., Cummings, D.A. *PLoS Neglected Tropical Diseases.* 2010 4(3):e617.

Gao, X., Ray, R., Xiao, Y., Ishida, K., Ray, P. *Pulm Pharmacol Ther.* 2010 Apr; 23(2):97-106.

#### *Safety of Administration of Human Butyrylcholinesterase and its Conjugates with Soman or VX in Rats.*

Genovese, R.F., Sun, W., Johnson, C.C., Ditargiani, R.C., Doctor, B.P., Saxena, A. *Basic Clin Pharmacol Toxicol.* 2010 May; 106(5):428-34.

#### *Japanese encephalitis: new options for active immunization.*

Halstead, S.B., Thomas, S.J. *Clinical Infectious Diseases.* 2010 Apr 15; 50(8):1155-64.

#### *Outbreak of febrile respiratory illness associated with adenovirus 11a infection in a Singapore military training CAMP.*

Kajon, A.E., Dickson, L.M., Metzgar, D., Hough, H.S., Lee, V., Tan, B.H. *Journal of Clinical Microbiology.* 2010 Apr; 48(4):1438-41.

#### *Human bocaviruses are highly diverse, dispersed, recombination prone, and prevalent in enteric infections.*

Kapoor, A., Simmonds, P., Slikas, E., Li, L., Bodhidatta, L., Sethabutr, O., Triki, H., Bahri, O., Oderinde, B.S., Baba, M.M., Bukbuk, D.N., Besser, J., Bartkus, J., Delwart, E. *Journal of Infectious Diseases.* 2010 Jun 1; 201(11):1633-43.

#### *Identification of mutations in a candidate dengue 4 vaccine strain 341750 PDK20 and construction of a full-length cDNA clone of the PDK20 vaccine candidate.*

Kelly, E.P., Puri, B., Sun, W., Falgout, B. *Vaccine.* 2010 Apr 9; 28(17):3030-7.

#### *Odor identification ability predicts executive function deficits following sleep deprivation.*

Killgore, W.D., Killgore, D.B., Grugle, N.L., Balkin, T.J. *Int J Neurosci.* 2010 May; 120(5):328-34.

#### *The impact of primer and probe-template mismatches on the sensitivity of pandemic influenza A/H1N1/2009 virus detection by real-time RT-PCR.*

Klungthong, C., Chinnawirotpisan, P., Hussem, K., Phonpakobsin, T., Manasatienkij, W., Ajariyakhajorn, C., Rungrojcharoenkit, K., Gibbons, R.V., Jarman, R.G. *J Clin Virol.* 2010 Jun; 48(2):91-5.

#### *Ubiquitin C-terminal hydrolase-L1 as a biomarker for ischemic and traumatic brain injury in rats.*

Liu, M.C., Akinyi, L., Scharf, D., Mo, J.X., Lamer, S.F., Muller, U., Oli, M.W., Zheng, W.R., Kobeissy, F., Papa, L., Lu, X.C., Dave, J.R., Tortella, F.C., Hayes, R.L., Wang, K.K.W. *European Journal of Neuroscience.* 2010 31(4):722-32.

#### *Anti-malarial activity of a non-piperidine library of next-generation quinoline methanols.*

Milner, E., McCalmont, W., Bhonsle, J., Caridha, D., Cobar, J., Gardner, S., Gerena, L., Goodine, D., Lanteri, C., Melendez, V., Roncal, N., Sousa, J., Wipf, P., Dow, G.S. *Malaria Journal.* 2010 9:51.

#### *Emergence of new alleles of the MSP-3alpha gene in Plasmodium vivax isolates from Korea.*

Nam, D.H., Oh, J.S., Nam, M.H., Park, H.C., Lim, C.S., Lee, W.J., Sattabongkot, J., Klein, T.A., Ayala, F.J. *American Journal of Tropical Medicine and Hygiene.* 2010 Apr; 82(4):522-4.

#### *Host determinants of HIV-1 control in African Americans.*

Pelak, K., Goldstein, D.B., Walley, N.M., Fellay, J., Ge, D., Shianna, K.V., Gumbs, C., Gao, X., Maia, J.M., Cronin, K.D., Hussain, S.K.,

Carrington, M., Michael, N.L., Weinrob, A.C. *Journal of Infectious Diseases.* 2010 Apr 15; 201(8):1141-9.

#### *Single-trial fMRI shows contralesional activity linked to overt M., Pak, E.P., Wilkerson, R.C. Malaria Journal. 2010 9:55.*

#### *HIV-1 incidence rates and risk factors in agricultural workers and dependents in rural Kenya: 36-month follow-up of the Kericho HIV cohort study.*

Shaffer, D.N., Ngetich, I.K., Bautista, C.T., Sawe, F.K., Renzullo, P.O., Scott, P.T., Kibaya, R.M., Imbuki, K.O., Michael, N.L., Bix, D.L., Wasunna, M.K., Robb, M.L. *Journal of Acquired Immune Deficiency Syndromes.* 2010 Apr 1; 53(4):514-21.

#### *Anti-leishmanial drug discovery: rising to the challenges of a highly neglected disease.*

Sharlow, E.R., Grogl, M., Johnson, J., Lazo, J.S. *Molecular Interventions.* 2010 Apr; 10(2):72-5.

#### *Dengue hemorrhagic fever: the sensitivity and specificity of the world health organization definition for identification of severe cases of dengue in Thailand, 1994-2005.*

Srikiatkachorn, A., Gibbons, R.V., Green, S., Libraty, D.H., Thomas, S.J., Endy, T.P., Vaughn, D.W., Nisalak, A., Ennis, F.A., Rothman, A.L., Nimmannitaya, S., Kalayanaraj, S. *Clinical Infectious Diseases.* 2010 Apr 15; 50(8):1135-43.

#### *Clinical performance of a rapid influenza test and comparison of nasal versus throat swabs to detect 2009 pandemic influenza A (H1N1) infection in Thai children.*

Suntarattiwong, P., Jarman, R.G., Levy, J., Baggett, H.C., Gibbons, R.V., Chotpitayasunondh, T., Simmerman, J.M. *Pediatric Infectious Disease Journal.* 2010 Apr; 29(4):366-7.

#### *Clinical performance of a rapid influenza test and comparison of nasal versus throat swabs to detect 2009 pandemic influenza A (H1N1) infection in Thai children.*

Suntarattiwong, P., Jarman, R.G., Levy, J., Baggett, H.C., Gibbons, R.V., Chotpitayasunondh, T., Simmerman, J.M. *Pediatric Infectious Disease Journal.* 2010 Apr; 29(4):366-7.

#### *Enteric Pathogen Sampling of Tourist Restaurants in Bangkok, Thailand.*

Teague, N.S., Srijan, A., Wongstitwilairoong, B., Poramathikul, K., Champathai, T., Rukksasiri, S., Pavlin, J., Mason, C.J. *Journal of Travel Medicine.* 2010 Mar-Apr; 17(2):118-23.

#### *Descriptive epidemiology of bipolar I disorder among United States military personnel.*

Weber, N.S., Cowan, D.N., Bedno, S.A., Niebuhr, D.W. *Mil Med.* 2010 Apr; 175(4):247-51.

#### *Natural history of colonization with gram-negative multidrug-resistant organisms among hospitalized patients.*

Weintrob, A.C., Roediger, M.P., Barber, M., Summers, A., Fieberg, A.M., Dunn, J., Seldon, V., Leach, F., Huang, X.Z., Nikolich, M.P., Wortmann, G.W. *Infect Control Hosp Epidemiol.* 2010 Apr; 31(4):330-7.

#### *Relationship of combat experiences to alcohol misuse among U.S. soldiers returning from the Iraq war.*

Wilk, J.E., Bliese, P.D., Kim, P.Y., Thomas, J.L., McGurk, D., Hoge, C.W. *Drug Alcohol Depend.* 2010 Apr 1; 108(1-2):115-21.

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